

CLAIMS

What is claimed is:

1. A method, comprising:  
forming a third halftone color plane, a fourth halftone color plane, and a fifth halftone color plane from a first halftone color plane and a second halftone color plane; and  
performing a compression on the third halftone color plane, the fourth halftone color plane, and the fifth halftone color plane.
2. The method as recited in claim 1, wherein:  
forming includes determining if a first halftone data value, included within the first halftone color plane, indicates placement of a first colorant onto a pixel;  
determining if a second halftone data value, included within the second halftone color plane, indicates placement of a second colorant onto the pixel;  
setting an element in a first array, corresponding to the third halftone color plane, to a first value for placement of the first and the second colorant onto the pixel;  
setting the element in the first array to a second value for placement of fewer than the first and the second colorant onto the pixel;  
setting an element in a second array, corresponding to the fourth halftone color plane, to the first value for placement of neither the first or the second colorant onto the pixel;  
setting the element in the second array to the second value for placement of either the first or the second colorant onto the pixel;  
setting an element in a third array, corresponding to the fifth halftone color plane, to the first value for placement of only the first colorant onto the pixel; and  
setting the element in the third array to the second value for

placement of only the second colorant onto the pixel.

3. The method as recited in claim 2, wherein:  
the first halftone color plane includes a cyan halftone color  
plane; and  
the second halftone color plane includes a magenta halftone  
color plane.

4. The method as recited in claim 3, wherein:  
the third halftone color plane includes pixels for placement of  
cyan colorant and magenta colorant.

5. The method as recited in claim 4, wherein:  
the fourth halftone color plane includes pixels for placement of  
no colorant.

6. The method as recited in claim 5, wherein:  
the fifth halftone color plane includes pixels for placement of  
either the cyan colorant or the magenta colorant.

7. The method as recited in claim 6, wherein:  
performing the compression includes performing a run length  
encoding.

8. The method as recited in claim 7, further comprising:  
performing a halftone operation upon a cyan color plane and a  
magenta color plane to generate, respectively, the cyan halftone color plane and  
the magenta halftone color plane.

9. The method as recited in claim 8, wherein:  
the halftone operation includes a plane dependent matrix based

3 halftoning operation.

1 10. The method as recited in claim 6, wherein:  
2 performing the compression includes performing JBIG encoding.

1 11. An apparatus, comprising:  
2 a processing device configured to form a third halftone color  
3 plane, a fourth halftone color plane, and a fifth halftone color plane from a first  
4 halftone color plane and a second halftone color plane and configured to perform  
5 a compression on the third halftone color plane, the fourth halftone color plane,  
6 and the fifth halftone color plane to generate compressed halftone data and to  
7 decompress the compressed halftone data to generate decompressed halftone  
8 data; and  
9 a memory configured to store the compressed and the  
10 decompressed halftone data.

1 12. The apparatus as recited in claim 11, wherein:  
2 the first halftone color plane corresponds to a cyan halftone  
3 color plane; and  
4 the second halftone color plane corresponds to a magenta  
5 halftone color plane.

1 13. The apparatus as recited in claim 12, wherein:  
2 the third halftone color plane includes pixels for placement of  
3 cyan colorant and magenta colorant;  
4 the fourth halftone color plane includes pixels for which no  
5 colorant will be placed; and  
6 the fifth halftone color plane includes pixels for placement of  
7 either the cyan colorant or the magenta colorant.

1 14. The apparatus as recited in claim 13, wherein:

the compression includes run length encoding.

15. The apparatus as recited in claim 14, wherein:

the processing device includes a processor configured to execute a first set of instructions to form the third, the fourth, and the fifth halftone color plane from the cyan halftone color plane and the magenta halftone color plane and configured to execute a second set of instructions to perform the run length encoding.

16. The apparatus as recited in claim 14, wherein:

the processing device includes an ASIC configured to form the third, the fourth, and the fifth halftone color plane from the cyan halftone color plane and the magenta halftone color plane and configured to perform the run length encoding.

17. An imaging device, comprising:

a processing device configured to form a third halftone color plane, a fourth halftone color plane, and a fifth halftone color plane from a first halftone color plane and a second halftone color plane and configured to perform a compression on the third halftone color plane, the fourth halftone color plane, and the fifth halftone color plane to generate compressed halftone data and to decompress the compressed halftone data to generate decompressed halftone data;

a memory configured to store the compressed and the decompressed halftone data; and

an imaging mechanism configured to place colorant on media according to the decompressed halftone data.

18. The imaging device as recited in claim 17, wherein:

the first halftone color plane corresponds to a cyan halftone color plane; and

4 the second halftone color plane corresponds to a magenta  
5 halftone color plane.

1 19. The imaging device as recited in claim 18, wherein:  
2 the third halftone color plane includes pixels for placement of  
3 cyan colorant and magenta colorant;  
4 the fourth halftone color plane includes pixels for which no  
5 colorant will be placed; and  
6 the fifth halftone color plane includes pixels for placement of  
7 either the cyan colorant or the magenta colorant.

1 20. The imaging device as recited in claim 19, wherein:  
2 the processing device includes a configuration to form the third,  
3 the fourth, and the fifth halftone color plane by determining if a plurality of cyan  
4 halftone data values, included within the cyan halftone color plane, indicate  
5 placement of the cyan colorant onto a corresponding plurality of pixels;  
6 by determining if a plurality of magenta halftone data values,  
7 included within the magenta halftone color plane, indicate placement of the  
8 magenta colorant onto the plurality of pixels;  
9 by setting a plurality of elements in a first array, corresponding  
10 to the third halftone color plane, to a first value for placement of the cyan and  
11 the magenta colorant onto the plurality of pixels;  
12 by setting the plurality of elements in the first array to a second  
13 value for placement of fewer than the cyan and the magenta colorant onto the  
14 plurality of pixels;  
15 by setting a plurality of elements in a second array,  
16 corresponding to the fourth halftone color plane, to the first value for placement  
17 of neither the cyan or the magenta colorant onto the plurality of pixels;  
18 by setting the plurality of elements in the second array to the  
19 second value for placement of either the cyan or the magenta colorant onto the  
20 plurality of pixels;

21 by setting a plurality of elements in a third array, corresponding  
22 to the fifth halftone color plane, to the first value for placement of only the cyan  
23 colorant onto the plurality of pixels; and

24 by setting the plurality of elements in the third array to the  
25 second value for placement of only the magenta colorant onto the plurality of  
26 pixels.

1 21. An inkjet printer, comprising:

2 a processor configured to form a blue halftone color plane, a  
3 white halftone color plane, and a cyan-magenta halftone color plane from a cyan  
4 halftone color plane and a magenta halftone color plane and configured to  
5 perform a run length encoding of the blue, white, and cyan-magenta color plane  
6 to generate compressed halftone data and to decompress the compressed  
7 halftone data to generate decompressed halftone data;

8 a memory configured to store the compressed and the  
9 decompressed halftone data; and

10 an imaging mechanism configured to place cyan ink and  
11 magenta ink onto media according to the decompressed halftone data.

1 22. The inkjet printer as recited in claim 21, wherein:

2 the processor includes a configuration to form the blue, the  
3 white, and the cyan-magenta color plane by determining if a plurality of cyan  
4 halftone data values, included within the cyan halftone color plane, indicate  
5 placement of the cyan colorant onto a plurality of pixels corresponding to the  
6 cyan halftone data values;

7 by determining if a plurality of magenta halftone data values,  
8 included within the magenta halftone color plane, indicate placement of the  
9 magenta colorant onto the plurality of pixels corresponding to the magenta  
10 halftone values;

11 by setting a plurality of elements in a first array, corresponding  
12 to the blue halftone color plane, to a first value for placement of the cyan and

the magenta colorant onto ones of the plurality of pixels;

by setting the plurality of elements in the first array to a second value for placement of fewer than the cyan and the magenta colorant onto ones of the plurality of pixels;

by setting a plurality of elements in a second array, corresponding to the white halftone color plane, to the first value for placement of neither the cyan or the magenta colorant onto ones of the plurality of pixels;

by setting the plurality of elements in the second array to the second value for placement of either the cyan or the magenta colorant onto ones of the plurality of pixels;

by setting a plurality of elements in a third array, corresponding to the cyan-magenta halftone color plane, to the first value for placement of only the cyan colorant onto ones of plurality of pixels; and

by setting the plurality of elements in the third array to the second value for placement of only the magenta colorant onto ones of the plurality of pixels.

23. A storage device, comprising:

a computer readable medium; and

processor executable instructions stored on the computer readable medium, with the processor executable instructions configured to form a third halftone color plane a fourth halftone color plane and a fifth halftone color plane from a first halftone color plane and a second halftone color plane and configured to perform a compression on the third halftone color plane, the fourth halftone color plane, and the fifth halftone color plane.

24. The storage device as recited in claim 23, wherein:

the first halftone color plane includes a cyan halftone color plane, the second halftone color plane includes a magenta halftone color plane, the third halftone color plane includes pixels for placement of cyan colorant and magenta colorant, the fourth halftone color plane includes pixels for which no

6 colorant will be placed, and the fifth halftone color plane includes pixels for  
7 placement of either the cyan colorant or the magenta colorant.

1 25. The storage device as recited in claim 24, wherein:  
2 the compression includes run length encoding.

1 26. A method, comprising:  
2 determining if a first halftone data value indicates placement of  
3 a first colorant onto a pixel;  
4 determining if a second halftone data value indicates placement  
5 of a second colorant onto the pixel;  
6 setting an element in a first array to a first value for placement  
7 of the first and the second colorant onto the pixel;  
8 setting the element in the first array to a second value for  
9 placement of fewer than the first and the second colorant onto the pixel;  
10 setting an element in a second array to the first value for  
11 placement of neither the first or the second colorant onto the pixel;  
12 setting the element in the second array to the second value for  
13 placement of either the first or the second colorant onto the pixel;  
14 setting an element in a third array to the first value for  
15 placement of only the first colorant onto the pixel; and  
16 setting the element in the third array to the second value for  
17 placement of only the second colorant onto the pixel.

1 27. The method as recited in claim 26, further comprising:  
2 repeating determining the placement of the first and the second  
3 colorant and setting the element in the first, second, and third array for a  
4 plurality of pixels forming an image.

1 28. The method as recited in claim 27, further comprising:  
2 run length encoding the first array, the second array, and the



third array.

29. The method as recited in claim 27, wherein:  
the first colorant corresponds to cyan; and  
the second colorant corresponds to magenta.

30. A method, comprising:  
setting a first halftone array element and a second halftone  
array element to a first value if a first array element equals a third value;  
setting the first halftone array element and the second halftone  
array element to a second value if a second array element equals the third value;  
setting the first halftone array element to the first value and the  
second halftone array element to the second value if a third array element equals  
the third value; and  
setting the first halftone array element to the second value and  
the second halftone array element to the first value if the third array element  
equals a fourth value.

31. The method as recited in claim 30, wherein:  
a cyan color plane includes the first halftone array element;  
a magenta color plane includes the second halftone array  
element.

32. The method as recited in claim 31, wherein:  
a blue color plane includes the first array element;  
a white color plane includes the second array element; and  
a cyan or magenta color plane includes the third array element.

33. The method as recited in claim 32, further comprising:  
decompressing a run length encoded blue color plane to  
generate the blue color plane;

4 decompressing a run length encoded white color plane to  
5 generate the white color plane; and  
6 decompressing a run length encoded cyan or magenta color  
7 plane to generate the cyan or magenta color plane.

1 34. The method as recited in claim 33, wherein:  
2 the first value and the third value correspond to a logic one;  
3 and  
4 the second value and the fourth value correspond to a logic  
5 zero.

TOP SECRET